ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 60

[EPA-HQ-OAR-2002-0049; FRL-8150-02-OAR]

RIN 2060–AU96

Standards of Performance for Steel Plants: Electric Arc Furnaces Constructed After 10/21/74 & On or Before 8/17/83; Standards of Performance for Steel Plants: Electric Arc Furnaces & Argon-Oxygen Decarburization Constructed After 8/17/83

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule; amendments.

SUMMARY: In this action, the EPA is proposing new and revised standards of performance for electric arc furnaces (EAF) and argon-oxygen decarburization (AOD) vessels in the steel industry. The EPA is proposing that EAF facilities that begin construction, reconstruction or modification after **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]** would need to comply with a particulate matter (PM) standard in the format of facility-wide PM emitted per amount of steel produced and a melt shop opacity limit of zero. The proposal would limit emissions of PM and opacity from new, modified, or reconstructed EAF and AOD vessels. In addition, we are proposing that all emission limits apply at all times; periodic compliance testing at least once every 5 years; and electronic reporting. In this action, the EPA also is proposing amendments for certain provisions in the current new source performance standards (NSPS) that apply to EAF constructed after October 21, 1974, and on or before August 17, 1983, and EAF and AOD vessels constructed after August 17, 1983, and before **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]** to clarify and refine the current provisions.

DATES: *Comments.* Comments must be received on or before **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. Under the Paperwork Reduction Act (PRA), comments on the information collection provisions are best

assured of consideration if the Office of Management and Budget (OMB) receives a copy of your comments on or before **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].**

Public Hearing. If anyone contacts us requesting a public hearing on or before **[INSERT DATE 5 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, we will hold a virtual hearing. See **SUPPLEMENTARY INFORMATION** for information on requesting and registering for a public hearing.

ADDRESSES: You may send comments, identified by Docket ID No. EPA-HQ-OAR-2002-0049, by any of the following methods:

- Federal eRulemaking Portal: *https://www.regulations.gov/* (our preferred method). Follow the online instructions for submitting comments.
- Email: *a-and-r-docket@epa.gov*. Include Docket ID No. EPA-HQ-OAR-2002-0049 in the subject line of the message.
- Fax: (202) 566-9744. Attention Docket ID No. EPA-HQ-OAR-2002-0049.
- Mail: U.S. Environmental Protection Agency, EPA Docket Center, Docket ID No. EPA-HQ-OAR-2002-0049, Mail Code 28221T, 1200 Pennsylvania Avenue, NW, Washington, DC 20460.
- *Hand/Courier Delivery:* EPA Docket Center, WJC West Building, Room 3334, 1301 Constitution Avenue, NW, Washington, DC 20004. The Docket Center's hours of operation are 8:30 a.m. – 4:30 p.m., Monday – Friday (except federal holidays).

Instructions: All submissions received must include the Docket ID No. for this rulemaking. Comments received may be posted without change to *https://www.regulations.gov/*, including any personal information provided. For detailed instructions on sending comments and additional information on the rulemaking process, see the **SUPPLEMENTARY INFORMATION** section of this document. Out of an abundance of caution for members of the public and our staff, the EPA Docket Center and Reading Room are open to the public by

appointment only to reduce the risk of transmitting COVID-19. Our Docket Center staff also continues to provide remote customer service via email, phone, and webform. Hand deliveries and couriers may be received by scheduled appointment only. For further information on the EPA Docket Center services and the current status, please visit us online at *https://www.epa.gov/dockets*.

FOR FURTHER INFORMATION CONTACT: For questions about this proposed action, contact Donna Lee Jones, Sector Policies and Programs Division (D243-02), Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711; telephone number: (919) 541-5251; fax number: (919) 541-3207; and email address: *Jones.DonnaLee@epa.gov*.

SUPPLEMENTARY INFORMATION:

Participation in virtual public hearing. Please note that the EPA is deviating from its typical approach for public hearings because the President has declared a national emergency. Due to the current Centers for Disease Control and Prevention (CDC) recommendations, as well as state and local orders for social distancing to limit the spread of COVID-19, the EPA cannot hold in-person public meetings at this time.

To request a virtual public hearing, contact the public hearing team at (888) 372-8699 or by email at *SPPDpublichearing@epa.gov*. If requested, the virtual hearing will be held on **[INSERT DATE 21 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. The hearing will convene at 10:00 a.m. Eastern Time (ET) and will conclude at 4:00 p.m. ET. The EPA may close a session 15 minutes after the last pre-registered speaker has testified if there are no additional speakers. The EPA will announce further details at *https://www.epa.gov/stationary-sources-air-pollution/electric-arc-furnaces-eafs-and-argon-oxygen-decarburization-vessels*.

If a public hearing is requested, the EPA will begin pre-registering speakers for the hearing no later than 1 business day after a request has been received. To register to speak at the

virtual hearing, please use the online registration form available at *https://www.epa.gov/stationary-sources-air-pollution/electric-arc-furnaces-eafs-and-argon-oxygen-decarburization-vessels* or contact the public hearing team at (888) 372-8699 or by email at *SPPDpublichearing@epa.gov*. The last day to pre-register to speak at the hearing will be **[INSERT DATE 12 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. Prior to the hearing, the EPA will post a general agenda that will list pre-registered speakers in approximate order at: *https://www.epa.gov/stationary-sources-air-pollution/electric-arc-furnaces-eafs-and-argon-oxygen-decarburization-vessels*.

The EPA will make every effort to follow the schedule as closely as possible on the day of the hearing; however, please plan for the hearings to run either ahead of schedule or behind schedule.

Each commenter will have 5 minutes to provide oral testimony. The EPA encourages commenters to provide the EPA with a copy of their oral testimony electronically (via email) by emailing it to *Jones.DonnaLee@epa.gov*. The EPA also recommends submitting the text of your oral testimony as written comments to the rulemaking docket.

The EPA may ask clarifying questions during the oral presentations but will not respond to the presentations at that time. Written statements and supporting information submitted during the comment period will be considered with the same weight as oral testimony and supporting information presented at the public hearing.

Please note that any updates made to any aspect of the hearing will be posted online at *https://www.epa.gov/stationary-sources-air-pollution/electric-arc-furnaces-eafs-and-argon-oxygen-decarburization-vessels*. While the EPA expects the hearing to go forward as set forth above, please monitor our website or contact the public hearing team at (888) 372-8699 or by email at *SPPDpublichearing@epa.gov* to determine if there are any updates. The EPA does not intend to publish a document in the *Federal Register* announcing updates.

If you require the services of a translator or a special accommodation such as audio

description, please pre-register for the hearing with the public hearing team and describe your needs by **[INSERT DATE 7 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. The EPA may not be able to arrange accommodations without advanced notice.

Docket. The EPA has established a docket for this rulemaking under Docket ID No. EPA-HQ-OAR-2002-0049. All documents in the docket are listed in the Regulations.gov index. Although listed in the index, some information is not publicly available, *e.g.*, Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy. Publicly available docket materials are available either electronically in Regulations.gov or in hard copy at the EPA Docket Center, Room 3334, WJC West Building, 1301 Constitution Avenue, NW, Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the EPA Docket Center is (202) 566-1742.

Instructions. Direct your comments to Docket ID No. EPA-HQ-OAR-2002-0049. The EPA's policy is that all comments received will be included in the public docket without change and may be made available online at *https://www.regulations.gov*, including any personal information provided, unless the comment includes information claimed to be CBI or other information whose disclosure is restricted by statute. Do not submit electronically to *https://www.regulations.gov* any information that you consider to be CBI or other information whose disclosure is restricted by statute. This type of information should be submitted as discussed below.

The EPA may publish any comment received to its public docket. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of

the primary submission (*i.e.*, on the Web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *https://www2.epa.gov/dockets/commenting-epa-dockets*.

The *https://www.regulations.gov/* website allows you to submit your comment anonymously, which means the EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an email comment directly to the EPA without going through *https://www.regulations.gov/*, your email address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, the EPA recommends that you include your name and other contact information in the body of your comment and with any digital storage media you submit. If the EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, the EPA may not be able to consider your comment. Electronic files should not include special characters or any form of encryption and be free of any defects or viruses. For additional information about the EPA's public docket, visit the EPA Docket Center homepage at *https://www.epa.gov/dockets*.

Out of an abundance of caution for members of the public and our staff, the EPA Docket Center and Reading Room are open to the public by appointment only to reduce the risk of transmitting COVID-19. Our Docket Center staff also continues to provide remote customer service via email, phone, and webform. Hand deliveries or couriers will be received by scheduled appointment only. For further information and updates on the EPA Docket Center services, please visit us online at *https://www.epa.gov/dockets*.

Submitting CBI. Do not submit information containing CBI to the EPA through *https://www.regulations.gov/*. Clearly mark the part or all the information that you claim to be CBI. For CBI information on any digital storage media that you mail to the EPA, note the docket ID, mark the outside of the digital storage media as CBI, and identify electronically within the

digital storage media the specific information that is claimed as CBI. In addition to one complete version of the comments that includes information claimed as CBI, you must submit a copy of the comments that does not contain the information claimed as CBI directly to the public docket through the procedures outlined in *Instructions* above. If you submit any digital storage media that does not contain CBI, mark the outside of the digital storage media clearly that it does not contain CBI and note the docket ID. Information not marked as CBI will be included in the public docket and the EPA's electronic public docket without prior notice. Information marked as CBI will not be disclosed except in accordance with procedures set forth in 40 Code of Federal Regulations (CFR) part 2.

Our preferred method to receive CBI is for it to be transmitted electronically using email attachments, File Transfer Protocol (FTP), or other online file sharing services (*e.g.*, Dropbox, OneDrive, Google Drive). Electronic submissions must be transmitted directly to the OAQPS CBI Office at the email address *oaqpscbi@epa.gov*, and as described above, should include clear CBI markings and note the docket ID. If assistance is needed with submitting large electronic files that exceed the file size limit for email attachments, and if you do not have your own file sharing service, please email *oaqpscbi@epa.gov* to request a file transfer link. If sending CBI information through the postal service, please send it to the following address: OAQPS Document Control Officer (C404-02), OAQPS, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, Attention Docket ID No. EPA-HQ-OAR-2002-0049. The mailed CBI material should be double wrapped and clearly marked. Any CBI markings should not show through the outer envelope.

Preamble acronyms and abbreviations. We use multiple acronyms and terms in this preamble. While this list may not be exhaustive, to ease the reading of this preamble and for reference purposes, the EPA defines the following terms and acronyms here:

acfm	actual cubic feet per minute
acmm	actual cubic meters per minute
AOD	argon-oxygen decarburization
BLDS	bag leak detection systems

BID	background information document
BPT	benefits per ton
BSER	best system of emissions reduction
CAA	Clean Air Act
CDX	Central Data Exchange
CEDRI	Compliance and Emissions Data Reporting Interface
CFR	Code of Federal Regulation
DEC	direct shell evacuation control
dscf	dry standard cubic feet
dscm	dry standard cubic meters
EAF	electric arc furnace
EAV	equivalent annual value
EIA	economic impact assessment
EJ	environmental justice
EPA	Environmental Protection Agency
ERT	Electronic Reporting Tool
^{o}F	degrees Fahrenheit
g	grams
gr	grains
II&S	integrated iron and steel industry
ISA	Integrated Science Assessment for Particulate Matter
kg	kilograms
lb	pounds
mg	milligram
Mg	megagram
Mg/yr	megagram per year
NAICS	North American Industry Classification System
NSPS	New Source Performance Standards
O&M	operating and maintenance
OAQPS	Office of Air Quality Planning and Standards
OMB	Office of Management and Budget
p.	page
PM	particulate matter
$PM_{2.5}$	particulate matter less than 2.5 micrometers
PRA	Paperwork Reduction Act
PV	present value
RFA	Regulatory Flexibility Act
RIA	regulatory impacts analysis
RIN	Regulatory Information Number
SMA	Steel Manufacturers Association
tpy	tons per year
UMRA	Unfunded Mandates Reform Act of 1995
U.S.	United States
U.S.C.	United States Code
VCS	Voluntary Consensus Standards

Organization of this document. The information in this preamble is organized as follows:

I. General Information

A. Does this action apply to me?

The source category that is the subject of this proposal is comprised of the steel manufacturing facilities that operate EAF and AOD vessels regulated under CAA section 111 New Source Performance Standards. The North American Industry Classification System (NAICS) code for the source category is 331110. This NAICS code provides a guide for readers regarding the entities that this proposed action is likely to affect. The proposed standards, once promulgated, will be directly applicable to the affected sources. Federal, state, local and tribal government entities would not be affected by this action.

B. Where can I get a copy of this document and other related information?

In addition to being available in the docket, an electronic copy of this action is available on the Internet. Following signature by the EPA Administrator, the EPA will post a copy of this proposed action at *https://www.epa.gov/stationary-sources-air-pollution/electric-arc-furnaces-eafs-and-argon-oxygen-decarburization-vessels*. Following publication in the *Federal Register*, the EPA will post the *Federal Register* version of the proposal and key technical documents at this same website.

Redline versions of the regulatory language that incorporate the changes proposed in this action to 40 CFR part 60, subparts AA and AAa are included in a memorandum titled *EAF NSPS Redline Versions of Proposed Rule Changes for 40 CFR part 60, subparts AA and AAa*, which is available in the docket for this action (Docket ID No. EPA-HQ-OAR-2002-0049). In addition, another memorandum will be available in the same docket that will include the proposed rule 40 CFR part 60, subparts AAb, titled *EAF NSPS Proposed Rule 40 CFR part 60, subpart AAb*. Following signature by the EPA Administrator, the EPA also will post copies of these memoranda to *https://www.epa.gov/stationary-sources-air-pollution/electric-arc-furnaces-eafs-and-argon-oxygen-decarburization-vessels*.

II. Background.

A. What is the background for action?

An electric arc furnace (EAF) is a metallurgical furnace used to produce carbon and alloy steels. The input material to an EAF is typically almost 100 percent scrap steel. Cylindrical, refractory-lined EAF are equipped with carbon electrodes to be raised or lowered through the furnace roof. With electrodes retracted, the furnace roof can be rotated to permit the charge of scrap steel by overhead crane. Alloying agents and fluxing materials usually are added through doors on the side of the furnace. Electric current is passed between the electrodes and through the scrap, producing an arc and generating enough heat to melt the scrap steel charge. After the

melting and refining periods, impurities (in the form of slag[1]) and the refined steel are poured from the furnace. If argon-oxygen decarburization (AOD) vessels are present, they follow the EAF in the production sequence and are used to oxidize carbon, silicon, and impurities, such as sulfur. For these reasons, the AOD vessels reduce alloy additions compared to an EAF alone. Use of AOD vessels also reduce EAF heat times, improve quality control, and increase daily steel production. AOD vessels are primarily used in stainless steel making.

The production of steel in an EAF is a batch process. Cycles, also called heats, range from about 1.5 to 5 hours to produce carbon steel and from 5 to 10 hours to produce alloy steel. Scrap steel is charged to begin a cycle, with alloying agents and slag forming materials added later in the process for refining purposes. Stages of each cycle normally are charging, melting, refining (which also usually includes oxygen blowing), and tapping. All these operations generate particulate matter (PM) emissions.

Air emission control techniques typically involve an air emission capture system and a gas cleaning system. The air emission capture systems used in the EAF industry include direct shell evacuation control (DEC) systems, side draft hoods, combination hoods, canopy hoods, scavenger ducts, and furnace enclosures. The DEC system consists of ductwork attached to a separate opening, or "fourth hole," in the furnace roof (top) that draws emissions from the furnace to a gas cleaner and which works only when the furnace is up-right and the roof is in place. Side draft hoods collect furnace exhaust gases from around the electrode holes and work doors after the gases leave the furnace. Combination hoods incorporate elements from the side draft and direct shell evacuation systems. Canopy hoods and scavenger ducts are used to address charging and tapping emissions. Baghouses are typically used as gas cleaning systems (*i.e.*, emissions control devices).

There are approximately 88 EAF in the United States of America (U.S.), with most (> 95

[1] Slag is the molten metal oxides and other impurities that float to the surface of the molten steel product.

percent) EAF subject to one of the EAF NSPS that are described below. Thirty-one states have one or more EAF facilities, with most of the EAF facilities east of the Mississippi River. Pennsylvania (15), Ohio (10), Alabama (7), and Indiana (7) have the most EAF facilities per state (approximate number of EAF facilities in each state).

In 1975, the first NSPS for EAF were promulgated (for EAF that commenced construction after October 21, 1974). (40 FR 43850). The 1975 NSPS set PM standards for emissions from EAF control devices (12 mg/dscm [0.0052 gr/dscf]), and set opacity limits for EAF melt shop emissions, which include but are not limited to emissions via roof vents, doors, cracks in walls, etc. (0 percent opacity, with 20 percent and 40 percent opacity allowed during charging and tapping, respectively); control device exhaust (3 percent opacity); and dust handling procedures (10 percent opacity).

In 1984, the NSPS rule, 40 CFR part 60, subpart AA (for EAF constructed after October 21, 1974, and on or before August 17, 1983) was revised and a new subpart was created as 40 CFR part 60, subpart AAa to add AOD vessels as affected units for EAF and AOD vessels that commenced construction after August 17, 1983 (49 FR 43843). These 1984 amendments to 40 CFR part 60, subpart AA raised the melt shop opacity from 0 percent to 6 percent opacity, keeping the exceptions for charging (20 percent opacity) and tapping (40 percent opacity). The EAF rule at 40 CFR part 60, subpart AAa set requirements for melt shop opacity at 6 percent with no exceptions. Both rules, 40 CFR part 60, subparts AA and AAa (and Appendix A to 40 CFR part 60) were revised in the 1984 amendments to include EPA Method 5D for the determination of PM emissions from positive-pressure fabric filters, which are common control devices for EAF and AOD vessels.[2]

On February 14, 1989 (54 FR 6672), 40 CFR part 60, subparts AA and AAa (and

[2] In the 1984 technology review of the 1975 EAF NSPS standards in subpart AA, test data were obtained from four facilities. The EPA at that time considered lowering the PM standard to 7.2 mg/dscm (0.0031 gr/dscf) from 12 mg/dscm (0.0052 gr/dscf), but the lower level was found by the EPA to be not cost-effective ($8,000/ton in 1984).

Appendix A to 40 CFR part 60) were revised to consolidate the EPA test methods and delete repetitions of methods already referenced; and on May 17, 1989 (54 FR 21344), minor corrections were made to the February 1989 revisions. On March 2, 1999 (64 FR 10109), as a result of recommendations made by the EPA's Common Sense Initiative, 40 CFR part 60, subparts AA and AAa were revised to add an option to monitor furnace static pressure instead of melt shop opacity; and to monitor baghouse fan amperage instead of baghouse flowrate. On October 17, 2000 (65 FR 61758), amendments were made to 40 CFR part 60, subparts AA and AAa to promulgate Performance Specification (PS) 15 for certifying continuous emission monitoring systems (CEMS) with Fourier transform infrared spectroscopy (FTIR); to reformat various methods as per recommendations by the Environmental Monitoring Management Council; and to make miscellaneous technical and editorial corrections. On February 22, 2005 (70 FR 8530), 40 CFR part 60, subparts AA and AAa were amended as a result of a petition by the American Iron and Steel Institute, Steel Manufacturers Association (SMA), and Specialty Steel Industry of North America to add bag leak detection systems (BLDS) as an alternative monitoring method to the continuous opacity monitoring systems currently cited in the rules.

B. What is the statutory authority for this action?

Section 111 of the Clean Air Act (CAA) requires the EPA Administrator to list categories of stationary sources that in the Administrator's judgement cause or contribute significantly to air pollution that may reasonably be anticipated to endanger public health or welfare. 42 U.S.C. 7411(b)(1)(A). The EPA must then issue performance standards for new (and modified or reconstructed) sources in each source category. 42 U.S.C. 7411(b)(1)(B). These standards are referred to as new source performance standards (NSPS). On October 11, 1974, the EPA Administrator identified and listed EAF that produce steel as such a source category for which NSPS should be developed and which were to be done within 120 days. (39 FR 37419). The EPA has the authority to define the scope of the source categories, determine the pollutants for which standards should be developed, set the emission level of the standards, and distinguish

among classes, type, and sizes within categories in establishing the standards. 42 U.S.C. 7411(b). The CAA section 111(b)(1)(B) requires the Administrator to review and revise, if appropriate, the NSPS every 8 years. 42 U.S.C. 7411(b)(l)(B).

The CAA section 111(a)(1) provides that performance standards are to "reflect the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated." 42 U.S.C. 7411(a)(1). This definition makes clear that the standard of performance must be based on controls that constitute "the best system of emission reduction… adequately demonstrated," which the EPA commonly refers to as "BSER." The EPA reviewed the requirements of 40 CFR part 60, subpart AAa and found that there were improvements in the performance of EAF, AOD, and their control devices since 1984. As explained in this preamble, the EPA has developed proposed performance standards for PM emissions and melt shop opacity that reflect BSER, considering the cost of achieving such emission reductions, and any nonair quality health and environmental impacts and energy requirements.

C. How does the EPA perform the NSPS review?

As noted in the section II.B, CAA section 111 requires the EPA, at least every 8 years to review and, if appropriate revise the standards of performance applicable to new, modified, and reconstructed sources. If the EPA revises the standards of performance, they must reflect the degree of emission limitation achievable through the application of the BSER taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements. CAA section 111(a)(1).

In reviewing an NSPS to determine whether it is "appropriate" to revise the standards of performance, the EPA evaluates the statutory factors, including the following information:

- Expected growth for the source category, including how many new facilities, reconstructions, and modifications may trigger NSPS in the future.
- Pollution control measures, including advances in control technologies, process operations, design or efficiency improvements, or other systems of emission reduction, that are "adequately demonstrated" in the regulated industry.
- Available information from the implementation and enforcement of current requirements indicates that emission limitations and percent reductions beyond those required by the current standards are achieved in practice.
- Costs (including capital and annual costs) associated with implementation of the available pollution control measures.
- The amount of emission reductions achievable through application of such pollution control measures.
- Any nonair quality health and environmental impact and energy requirements associated with those control measures.

In evaluating whether the cost of a particular system of emission reduction is reasonable, the EPA considers various costs associated with the particular air pollution control measure or a level of control, including capital costs and operating costs, and the emission reductions that the control measure or particular level of control can achieve. The agency considers these costs in the context of the industry's overall capital expenditures and revenues. The agency also considers cost-effectiveness analysis as a useful metric, and a means of evaluating whether a given control achieves emission reduction at a reasonable cost. A cost-effectiveness analysis allows comparisons of relative costs and outcomes (effects) of two or more options. In general, cost-effectiveness is a measure of the outcomes produced by resources spent. In the context of air pollution control options, cost-effectiveness typically refers to the annualized cost of implementing an air pollution control option divided by the amount of pollutant reductions realized annually.

After the EPA evaluates the factors described above, the EPA then compares the various systems of emission reductions and determines which system is "best." The EPA then establishes a standard of performance that reflects the degree of emission limitation achievable through the implementation of the BSER. In doing this analysis, the EPA can determine whether subcategorization is appropriate based on classes, types, and sizes of sources, and may identify a different BSER and establish different performance standards for each subcategory. The result of the analysis and BSER determination leads to standards of performance that apply to facilities that begin construction, reconstruction, or modification after the date of publication of the proposed standards in the *Federal Register*. Because the new source performance standards reflect the best system of emission reduction under conditions of proper operation and maintenance, in doing its review, the EPA also evaluates and determines the proper testing, monitoring, recordkeeping and reporting requirements needed to ensure compliance with the emission standards.

See section III.A of this preamble for information on the specific data sources that were reviewed as part of this action.

III. What actions are we proposing?

A. Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After [**INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER**]

The proposed standards, as 40 CFR part 60, subpart AAb, would apply to all new, modified, or reconstructed EAF and AOD vessels, and their associated dust-handling systems in the steel industry, which commence construction, reconstruction, or modification after [**INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER**]. The proposed standards would limit total PM emissions from all pollution control devices (*e.g.*, baghouses) installed on EAF and AOD vessels, in terms of total mass of PM emitted at the facility per total mass of steel produced, to 79 milligrams PM per kilogram steel (mg/kg) [0.16 pounds (lb) PM per ton steel

produced (lb/ton)]). Visible emissions from EAF and AOD that exit from the melt shop would be limited to an opacity of 0 percent during all phases of operation. Visible emissions from control devices on EAF and AOD would remain at less than 3 percent opacity, as in the current EAF NSPS for 40 CFR part 60, subparts AA and AAa. Opacity of the dust handling system also would remain at less than 10 percent as in the current NSPS at 40 CFR part 60, subparts AA and AAa.

Explanation of the procedures and data used to determine the format and values of the proposed standards as BSER for EAF are discussed below. Also discussed is the review of the standards for opacity for EAF control devices and dust handling systems in the current NSPS rules.

1. New Format for PM Baghouse Limits for 40 CFR part 60, Subpart AAb

From EAF PM test reports covering the period from 2005 through 2017, the EPA obtained PM emissions and opacity data for 33 facilities, 46 EAF, and 54 baghouses in 154 emission and opacity tests[3] (hereafter referred to as the "EAF dataset"). The test data showed a substantial improvement in EAF, AOD, and baghouse performance beyond the current NSPS PM standard. Among these 33 facilities (more than one-third of the current industry) and their 54 baghouses, the highest baghouse PM emissions were 44 percent of the current standard (5.3 mg/dscm [2.30E-03 gr/dscf]), the lowest emissions were 0.83 percent of the current standard (0.10 mg/dscm [4.33E-05 gr/dscf]), and the median emissions were 10 percent of the current standard (1.2 mg/dscm [5.11E-04 gr/dscf]). From these test data, as well as the RACT/BACT/LAER Clearinghouse Data repository,[4] the EPA identified 15 EAF facilities,

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[3] For details of the EAF dataset, see the memorandum titled "Particulate Matter Emissions from Electric Arc Furnace Facilities" located in the docket for this rule (Docket ID No. EPA-OAR-2002-0049).

[4] See *https://www.epa.gov/catc/ractbactlaer-clearinghouse-rblc-basic-information* for more information. RACT, or reasonably available control technology, is required on existing sources in areas that are not meeting national ambient air quality standards (*i.e.*, nonattainment areas); BACT, or best available control technology, is required on major new or modified sources in clean areas (*i.e.*, attainment areas); and LAER, or lowest achievable emission rate, is required on major new or modified sources in nonattainment areas.

approximately half of the EAF dataset, that reported 0 percent melt shop opacity. The number of opacity tests per facility with 0 percent melt shop opacity ranged from 1 test to 3 tests, with a median of 2 tests.

The current EAF NSPS (40 CFR part 60, subparts AA and AAa) include numerical limits for PM emissions from EAF (and also AOD in 40 CFR part 60, subpart AAa) control devices and apply to each individual control device, typically a baghouse, which is also known as a fabric filter. Some EAF or AOD vessel baghouses control the bulk of PM emissions, which occur during melting and refining, where the emissions are captured by hoods, canopies, or other mechanisms directly from the EAF or AOD vessel exhaust (and are called primary emissions); other baghouses control the fugitive PM emissions that are emitted during charging and tapping, from other melt shop processes such as ladling of alloys, or that escape the primary capture systems. Fugitive emissions also are called secondary emissions. A third type of baghouse controls both primary and secondary emissions. The above-mentioned baghouse types may control PM from one or more EAF/AOD, primary or secondary, in various combinations.

The emissions, and, hence, collected PM, from baghouses that control only secondary emissions can be much lower than the other two types of baghouses, as seen in the EAF dataset where the baghouse with the lowest PM emissions controlled only secondary emissions.[5] Because of the inherent lower baghouse PM input (loading), secondary baghouses can be operated inefficiently without exceeding the current NSPS limit, which is expressed in the units of mass PM per unit of control device exhaust air. In addition, where there is a standard in terms of mass PM per unit of total exhaust air, baghouse dilution air (added to EAF exhaust air) can be increased with the effect of lowering measured baghouse PM emission concentration and disguising the true performance of the baghouse.

The EPA is proposing to set a facility-wide PM limit instead of a limit that applies to

[5] The baghouse with the lowest emissions in the EAF dataset was 0.83 percent of the current standard (0.10 mg/dscm [4.33E-05 gr/dscf]).

each control device (the format of the current standard), because we think this form of standard will result in better control and provide greater assurance of compliance. Most importantly, if EAF emissions can be divided up into separate baghouses, for practical purposes or otherwise, with each device falling under the same NSPS PM limit, there is no accounting for the total PM emissions from the facility. A facility-wide total control device PM emissions limit in units of pounds of PM per ton of steel produced also would alleviate the potential disparity in control device emissions between low-and high-loading control devices, such as that for control devices for primary *vs*. secondary emissions, as well as for well-operated *vs*. inefficiently-operated control devices that both operate below the individual baghouse limit.

To determine BSER for control device PM emissions, the EPA only used data from EAF facilities with 0 percent melt shop opacity. This was because facilities that control their melt shop opacity to 0 percent are collecting more PM (specifically from the melt shop) than facilities that have a nonzero melt shop opacity and, as a result, are sending more PM to their control devices. Consequently, EAF facilities with 0 percent melt shop opacity are expected to have a slightly higher control device PM emission rate on average compared to EAF facilities with greater than 0 percent melt shop opacity, as evidenced by the EAF dataset of 33 EAF facilities. As a corollary, at EAF facilities with 6 percent melt shop opacity, some of the PM generated by the EAF is not captured, avoids the control device, and can exit through the melt shop roof, thus raising the melt shop opacity to above zero. In turn, facilities with 6 percent melt shop opacity collect less PM and, therefore, less PM is sent to control device, which results in (slightly) lower PM emissions in the control device exhaust. Overall, because of the large amount of PM emission differential between 6 percent and 0 percent melt shop opacity, much less PM is emitted to the environment with 0 percent melt shop opacity than with 6 percent opacity, despite the higher level of control device emissions with 0 percent melt shop opacity. This effect is described quantitatively below in section 2.c.

Of the 15 EAF facilities in the EPA dataset with 0 percent melt shop opacity, control

device PM emissions data and steel production values needed to develop an emission standard in mass of PM per mass of steel production were available for 13 of the 15 facilities; these data included 51 individual tests from 23 baghouses and 21 EAF. The 13 EAF facilities and their PM emissions were used to demonstrate that 0 percent melt shop opacity is BSER and to develop a facility-wide total PM control device emission standard that is BSER for new, modified, and reconstructed EAF.

2. Analyses to Determine BSER for Melt Shop Opacity and PM Emissions from Control Devices

The PM and opacity test data for 13 EAF facilities with 0 percent melt shop opacity were used as a major input to determine the BSER for melt shop opacity and for total facility-wide PM control device emissions (in units of mass of PM emissions per mass of steel produced). The cost, emissions reduction analyses, and other factors used in the determination of BSER are discussed below and in more detail in the memorandum titled *Cost and Other Analyses to Determine BSER for PM Emissions and Opacity from EAF Facilities,*[6] hereafter referred to as the *Cost Memorandum*.

a. BSER for Melt Shop Opacity

To determine if 0 percent opacity is BSER for the EAF melt shop, an estimate of the PM emissions reductions compared to the baseline level of the current standards (40 CFR part 60, subparts AA and AAa), at 6 percent, was made along with the costs to achieve the additional PM control and opacity reduction from 6 percent to 0 percent. We also considered other factors, such as the findings that the proposed melt shop opacity of 0 percent was being achieved by 19 of the 31 facilities for which the EPA has opacity data (from 2010), and that for the remaining 12 facilities, average opacity in the test data was no higher than 1.2 percent (with a range of 0.1 percent to 1.2 percent). Based on these data, we conclude that an opacity limit of 0 percent is

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[6] *Cost Analyses to Determine BSER for PM Emissions and Opacity from EAF Facilities.* D.L. Jones, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, and G.E. Raymond, RTI International, Research Triangle Park, North Carolina. March 1, 2022 (Docket ID No. EPA-OAR-2002-0049.

feasible and well demonstrated.

To determine the PM emission reductions, emissions data from the EAF dataset were used along with emission factors and EAF control information in an EPA background information document (BID) about the EAF industry prepared for the 1984 EAF NSPS.[7] For assessing the costs of the reductions, it was assumed that facilities achieving 0 percent melt shop opacity have better fugitive collection than facilities with higher melt shop opacities. Consequently, for the BSER calculations, costs were assessed for adding a partial roof canopy (segmented canopy hood, closed roof over furnace, open roof monitor elsewhere) to collect PM emissions that might otherwise escape through the melt shop roof vents to achieve complete control of melt shop fugitives. The procedures used to determine whether 0 percent opacity using new canopy hooding is BSER are summarized below. Details of the BSER cost procedures can be found in the *Cost Memorandum*.[6]

PM Emission Reductions with 0 percent Opacity: Two approaches were used to develop estimates of PM emission reductions with the addition of a partial roof canopy in order to reduce melt shop opacity from 6 percent to 0 percent. The resulting average PM emission reduction of the two estimates, at 660 megagram per year (Mg/yr) [730 tons per year (tpy)], was used in the final BSER calculation. The methodology for each of the two approaches is described below and in more detail in the *Cost Memorandum*.[6]

The first method to estimate PM reductions to compare PM emissions with 0 percent melt shop opacity to emissions with 6 percent was partially based on data from the EAF BID.[7] The average uncontrolled EAF PM emissions of 15 g/kg [29 lb/ton] from the EAF BID[8] was used

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[7] *Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels in Steel Industry - Background Information for Proposed Revisions to Standards – Draft EIS, Preliminary* (EPA-450/3-82-020a). U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina. July 1983.

[8] *Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels in Steel Industry - Background Information for Proposed Revisions to Standards – Draft EIS*, Preliminary (EPA-450/3-82-020a). U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina. 1982. Table 3-7, p. 3-37.

along with the average capture efficiency of a "segmented canopy hood, closed roof over furnace, open roof monitor elsewhere," at 90 percent,[9] and the estimated steel production at an average EAF facility, at 490,000 Mg/yr [540,000 tpy][10] to estimate the roof vent PM emission rate of 630 Mg/yr [700 tpy]. This value was assumed to be the melt shop PM fugitive emission rate from the roof vent of a melt shop with 6 percent opacity, the current EAF NSPS opacity standard.

The second method used to estimate PM emission reductions to compare PM emissions with 0 percent melt shop opacity to PM emissions with 6 percent opacity was based on data obtained from the EPA dataset for facilities with 0 or 6 percent melt shop opacity.[3] Opacity and PM emission data were available for 9 EAF facilities, 12 EAF/AOD, 13 baghouses, and 33 tests where 6 percent melt shop opacity was achieved; and 13 facilities, 21 EAF/AOD, 23 baghouses, and 51 individual tests where 0 percent melt shop opacity was achieved.[3] The annual baghouse stack emissions for facilities with 6 percent melt shop opacity was estimated at 11,000 Mg/yr [12 tpy] PM based on an average emission rate of 22 mg/kg [4.4E-02 lb/ton] for nine facilities using an average steel production rate of 490,000 Mg/yr [540,000 tpy] steel, as discussed above.[10] The total PM emissions generated by the EAF are the PM emissions sent to the baghouse plus the uncaptured emissions emanating from the melt shop as opacity, if not controlled to 0 percent opacity. The captured PM emissions routed to the baghouse can be calculated from the average PM emitted from the baghouse (11 Mg/yr [12 tpy]) in the EPA dataset and the assumption of baghouse control efficiency of 99.8 percent, to produce an estimate of 5,500 Mg/yr [6,000 tpy] PM routed to the baghouse at a facility where 6 percent melt shop opacity was achieved.

Further, in the second approach, to calculate total PM emissions generated (uncontrolled)

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[9] *Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels in Steel Industry - Background Information for Proposed Revisions to Standards – Draft EIS, Preliminary* (EPA-450/3-82-010a). U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina. Table 4-2, combination 2, p. 4-23.

[10] From the median of industry capacity data for EAF facilities provided to the EPA by SMA in 2018, assuming 70 percent capacity utilization.

by the EAF, the estimate of 5,500 Mg/yr [6,000 tpy] uncaptured PM routed to the baghouse estimated above, is added to an estimate of uncaptured PM emitted from the melt shop where there is 6 percent melt shop opacity. Using the estimate of 90 percent captured PM at a melt shop with 6 percent opacity, the total PM emissions generated by the EAF is calculated as 6,000 Mg/yr [6,700 tpy PM]. The difference between the PM generated and the PM captured, at 600 Mg/yr [670 tpy] is the second estimate of the amount of PM that is controlled when comparing the PM emitted from 6 percent melt shop opacity compared to 0 percent opacity, because all PM is captured at a 0 percent melt shop opacity facility.

As a check on the estimate of 6,700 tpy total uncontrolled PM from the EAF, an emission factor in format of PM emitted per ton steel is calculated from the average steel production used in the calculations. The result, at 13 g/kg [25 lb/ton] PM emitted per ton steel, is in the expected range as that cited above in the first method, between 8.5 and 21 g/kg [17 to 42 lb/ton]) from the EAF BID.[8] This result also confirms that the baghouse efficiency value at 99.8 percent, used in the calculation is appropriate. The average of the results with the two methods, at 660 Mg PM/yr [730 tpy] controlled, is used in the BSER analysis as the additional PM controlled between 0 percent melt shop opacity and 6 percent.

Costs for Installing and Operating a Partition Roof Canopy: Canopy hoods are a common method of controlling fugitive EAF emissions.[11] To estimate the costs for EAF facilities to reduce their PM emissions and melt shop opacity from 6 percent to 0 percent opacity, the costs for addition of a partition roof canopy (above the crane rails) were estimated using the procedure and information from the Ferroalloys NESHAP, where EAF also are used and shop fugitives also are a concern.[12] Detailed cost information from or about EAF facilities was not available to the

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[11] *Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels in Steel Industry - Background Information for Proposed Revisions to Standards – Draft EIS, Preliminary* (EPA-450/3-82-010a). U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina. 1982.

[12] *Cost Impacts of Control Options Considered for the Ferroalloys Production NESHAP to Address Fugitive HAP Emissions*. U.S. Environmental Protection Agency, Office of Air Quality

EPA to directly calculate cost estimates for a canopy at steel-making EAF facilities; whereas, the ferroalloy cost estimates do include detailed cost input parameters from the ferroalloy industry which we used to estimate such costs at an EAF facility. The EPA seeks comment regarding this cost analysis and seeks detailed information on EAF source category-specific costs to further inform the development of the final rule.

To adapt the ferroalloy cost-estimating procedure to steelmaking EAF, equipment costs and other parameters were scaled by the ratio of the ferroalloys EAF flowrate at 200 degrees Fahrenheit (^{o}F) (9,400 actual cubic meters per minute (acmm) [330,000 actual cubic feet per minute (acfm)] to EAF flowrate at 200^{o}F (18,000 acmm [640,000 acfm]) for a medium-sized steel facility in the EAF data, which corresponded to 15,000 standard cubic meters per minute [530,000 standard cubic feet per minute]. Using the ferroalloy cost estimates with the flowrate of a medium-sized steelmaking EAF produced capital costs for a partial canopy hood of $6,800,000; operating and maintenance costs are $340,000; and total annualized costs are $800,000 in 2020 dollars for a medium-sized EAF. Similar cost analyses were done for a small and large EAF facility using flowrates from the EAF data. Table 1 shows the cost estimates for small, medium, and large EAF baghouses and melt shops to achieve 0 percent melt shop opacity with a partial roof canopy hood above the crane rails compared to model plants meeting the rule requirement of 6 percent opacity.

TABLE 1. MODEL PLANT COSTS AND PARAMETERS FOR ACHIEVING 0 PERCENT MELT SHOP OPACITY COMPARED TO MODEL PLANTS OPERATING AT THE CURRENT RULE REQUIREMENT OF 6 PERCENT OPACITY BY ADDING A PARTIAL ROOF CANOPY HOOD ABOVE THE CRANE RAILS

Cost Parameter	Model Plant Size		
	Small	Medium	Large
Air flow, acmm [acfm]	1,300 [45,000]	18,000 [640,000]	91,000 [3,200,000]
Capital Costs	$480,000	$6,800,000	$34,000,000
Operating and Maintenance Costs	$27,000	$340,000	$1,700,000
Total Annualized Costs	$60,000	$800,000	$4,000,000
PM Removed 6% opacity to 0% opacity, Mg/yr [tpy]	51	660	3,600

Planning and Standards, Research Triangle Park, North Carolina Docket ID No. EPA-HQ-OAR-2010-0895-0177. August 2014.

	[56]	[730]	[4,000]
Cost-effectiveness, $/Mg [$/ton]	$1,200 [$1,100]	$1,200 [$1,100]	$1,100 [$1,000]

Note: Numbers have been rounded and, therefore, may not calculate exactly.

However, new, modified, or reconstructed facilities would need to comply with applicable state requirements, and programs such as New Source Review (NSR), if the NSR applicability criteria are met. Under NSR, certain technology requirements apply depending on the location of the facility (*i.e.*, lowest achievable emission rates (LAER) in nonattainment areas, or best achievable control technology (BACT) in attainment areas). Therefore, the cost estimates shown in Table 1 are considered conservative (*i.e.*, more likely to be overestimates than underestimates). We estimate that the actual cost impacts of the proposed 0 percent opacity limit likely would be lower because we expect any new, modified, or reconstructed facility would be able to meet the proposed opacity and PM limits without any additional control equipment beyond those already required by NSR or applicable state requirements, or by minor process changes to improve capture of exhaust flows or other process parameters, if needed.

Overall Cost Effectiveness to Achieve 0 percent Melt Shop Opacity: Using the annual costs of $800,000 per year (described above), for a partition roof canopy (above the crane rails) for a medium-sized steelmaking EAF and a PM reduction of 660 Mg/yr [730 tpy] for achieving 0 percent melt shop opacity compared to 6 percent opacity (also described above) the cost-effectiveness is $1,210 per Mg [$1,100 per ton] PM removed for a medium-sized EAF and melt shop. The same analyses performed for small and large EAF baghouses and melt shops produced similar cost-effectiveness estimates, at $1,200 per Mg [$1,100 per ton] and $1,100 per Mg [$1,000 per ton] for small and large EAF baghouses, respectively, as shown in Table 1. The values of $1,200 per Mg [$1,100 per ton] and lower are well within the range of what the EPA has considered cost-effective for the control of PM emissions, and, therefore, 0 percent melt shop opacity is considered BSER for EAF.

b. Facility-wide Total PM Control Device Emission Limit

The PM emissions data in the EAF dataset from the 13 EAF facilities with 0 percent opacity were used to determine BSER for EAF and AOD facilities along with the estimated costs of control. The number of PM test reports used per facility ranged from one (3-run) test to 10 tests, with a median of three tests. The EAF facility total baghouse PM emissions per mass of steel produced from the 13 facilities with 0 percent melt shop opacity ranged from a low of 6.5 mg/kg [0.013 lb/ton] to a high of 79 mg/kg [0.016 lb/ton] with a median of 26 mg/kg [0.052 lb/ton].

The control costs for a range of baghouse performance levels were estimated based on baghouse air-to-cloth (A/C) ratio, which is expressed in units of volume of air flow per unit bag area (*i.e.*, cloth), or meters [feet] per unit of time. The A/C ratio is generally accepted as the most important design parameter between baghouses of different performance levels, where a low A/C ratio is considered to be the best level of control (less air and more baghouse filter cloth) and a high A/C ratio is a low or poor level control (high air volume and low baghouse filter area).[13] Because no A/C ratio data were available in the EAF PM test reports, values for A/C from CAA section 114 responses submitted by the integrated iron and steel (II&S) industry for the risk and technology review for 40 CFR part 63, subpart FFFFF (85 FR 42074)[14] ratio were used in the EAF BSER PM cost analysis. The baghouses used for emissions from furnaces in the II&S industry are expected to be similar in operation as the baghouses used at EAF/AOD for the purposes of this analysis. The A/C ratio in the II&S data ranged from a low of 24 m/s [1.3 ft/min] to a high of 130 m/s [7.2 ft/min].

In order to explore what level of PM emissions per mass of steel produced derived from

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[13] *EPA Air Pollution Control Cost Manual, Sixth Edition*, EPA/42/B-02-001. U. S. Environmental Protection Agency, Research Triangle Park, NC. January 2002. Section 6, Particulate Matter Controls, Chapter 1, Baghouses and Filters. Available at: *https://www3.epa.gov/ttn/catc/dir1/c_allchs.pdf*.

[14] *Summary of Questionnaire (Enclosure 1) Responses to EPA Information Collection Requests from Integrated Iron & Steel Facilities.* U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina. (Docket ID Item No. EPA-HQ-OAR-2002-0083-0614).

the dataset would be BSER, five evenly-spaced points in the ranked PM mass rate data in the EAF data and five evenly-spaced points in the ranked A/C ratios were matched to represent five model facilities of various levels of baghouse-controlled PM emissions, with the lowest (best) PM mass emission rate matched to the lowest (best) A/C ratio and labeled Model Plant A, and the highest in both variables labelled Model Plant E. The intermediary facilities were matched similarly so that there were five distinct operating levels to produce five model plants.

In addition, a "baseline" model plant was developed using a PM mass emission rate (in mass PM per mass steel) that was estimated as equivalent to the current NSPS standard (in mass per unit flowrate) using the EAF dataset, where data in both mass emissions per mass of steel produced and in mass per unit flowrate were available. The PM mass emission rate for the baseline model plant was estimated using the ratio of the mass per unit flowrate of the highest emitting facility in the dataset (Model Plant E) at 9.2 mg/dscm [0.0040 gr/dscf] to the NSPS standard (12 mg/kg [0.0052 gr/dscf]) for a ratio of 0.77 (9.2/12 mg/kg [0.0040/0.0052 gr/dscf]), and back calculating an equivalent mass value using the 0.77 ratio and the PM mass rate of Model Plant E in units of mass PM per mass of steel produced (79 mg/kg [0.16 lb/ton]/0.77). The resulting value of 100 mg/kg [0.20 lb/ton] was used as an estimate of the PM mass emission rate per mass of steel produced for the NSPS baseline model plant. An A/C ratio of 8.0 was used for the baseline model plant, as the highest A/C ratio that realistically could be expected.[13]

Table 2 shows the PM mass emission rates and A/C ratios for the five model plants and the baseline model plant. Details of the analysis are described in the *Cost Memorandum*.[6]

TABLE 2. MODEL PLANT PARAMETERS

Model Plants	PM Emission Rate (PM per steel produced)		A/C Ratio	
	mg/kg	lb/ton	m/min	ft/min
A	6.5	0.013	0.40	1.3
B	17	0.034	0.88	2.9
C	40	0.08	1.2	4.0
D	50	0.10	1.5	4.9
E	79	0.16	2.2	7.2
Baseline	100	0.20	2.4	8.0

Note: The baseline model facility emissions are based on an estimate in units of mg/kg (lb/ton) of the current limit, which is in units of mg/dscm (gr/dscf).

Steel production for each model facility size was taken from industry capacity data[15] and corresponded to 45,000, 700,000, and 3,100,000 Mg/yr [50,000, 780,000, and 3,500,000 tpy][16] for small, medium or "average," and large facilities, respectively, where medium was determined from the median of industry data, and small and large were the smallest and largest facilities. Estimates of baghouse flowrate were taken from the EAF data, at 1,300, 18,000, and 91,000 acmm [45,000, 640,000, and 3,200,000 acfm][16] for small, medium, and large facility-level baghouses, respectively. At these operating levels and the emission rate per mass of steel produced developed from the PM emissions in the EAF data, as described above, the PM emissions for the Model Plants A through E range from 0.27 to 3.5 Mg/yr, 4.6 to 55 Mg/yr, and 20 to 250 Mg/yr [0.30 to 3.9 tpy, 5.1 to 61 tpy, and 23 to 270 tpy], for small, medium, and large facilities, respectively. For the baseline model plant, PM emissions were estimated to be 4.6, 72, and 320 Mg/yr [5.1, 72, and 350 tpy] for small, medium, and large facilities, respectively.

Costs of control were estimated using the EPA cost-estimating procedures[13] based on model baghouses with flows and production levels for baghouses at small, medium, and large facilities, as described above. Differences in capital costs for the model plants mainly reflect the cost of bags needed for each A/C ratio. The operating and maintenance (O&M) costs reflect periodic replacement of bags, along with other typical baghouse O&M costs. Annual costs include the annualized capital costs combined with the annual operating and maintenance costs.

Capital, annual O&M, and annualized costs were estimated for new baghouses at new facilities corresponding to the five model plants and the baseline model plant for small, medium or "average," and large model facilities following the procedures in the EPA Cost Manual[13] to meet each level of model plant PM emissions and A/C ratios, and for all three facility sizes. In

[15] From the industry capacity data for EAF facilities provided to the EPA by SMA in 2018.
[16] Numbers have been rounded and may not exactly match calculations.

this analysis, Model Plant A has the lowest emissions, the lowest A/C ratio, and the highest costs for a new baghouse at a new facility; and Model Plant E, has the highest emissions, highest A/C ratio, and lowest costs, for a new baghouse at a new facility; all model plants emit less PM emissions than a (new) baseline model plant, have lower A/C ratios, and have higher costs for a new baghouse at a new facility. The BSER PM level is determined by comparing the (new) baseline model plant costs and emissions to each model plant, starting with the model plant with the highest estimated emissions and lowest costs (Model Plant E), and ending with the model plant with the lowest emissions and highest costs (Model Plant A), and repeating the analysis for each of the three facility sizes, small, medium, and large.

Estimated capital costs[6] for new baghouses for Model Plants A through E ranged from $710,000 to $1,900,000 for a small facility; $4,300,000 to $21,000,000 for a medium facility; and $20,000,000 to $100,000,000 for a large facility. Operating and maintenance costs for the five model plants ranged from $190,000 to $260,000 for a small facility; $1,300,000 to $2,200,000 for a medium facility; and $5,500,000 to $10,000,000 for a large facility. Annual costs for the five model plants ranged from $238,000 to $380,000 for a small facility; $1,600,000 to $3,600,000 for a medium facility; and $6,800,000 to $17,000,000 for a large facility.

Capital costs for the baseline facility were estimated to be $680,000 for a small facility, $3,900,000 for a medium facility, and $18,000,000 for a large facility. Operating and maintenance costs for the baseline facility were estimated to be $190,000 for a small facility, $1,300,000 for a medium facility, and $5,400,000 for a large facility. Annual costs for the baseline facility were estimated to be $236,000 for a small facility, $1,500,000 for a medium facility, and $6,600,000 for a large facility.[6]

The results of the cost analyses in Table 3 for a medium-sized model facility show the estimated costs, PM emissions reduced, and cost-effectiveness for Model Plants A through E and the baseline model plant for a medium-size facility. The cost analyses in Table 3 indicate that the highest emitting model plant (E) in the cost analysis, at 79 mg/kg [1.6E-01 lb/ton], is within the

range of what the EPA has considered to be a cost-effective level of control for PM emissions relative to the baseline model plant, at approximately $2,000 per Mg PM removed [$1,800 per ton PM removed] for a medium-sized facility. This level reflects an estimated 22 percent reduction in emissions from the baseline model plant (100 mg/kg [0.20 lb/ton]). The cost impacts of the next level of emission control in the cost analysis for medium-sized facilities, for Model D (50 mg/kg (0.10 lb/ton)), is $6,100/Mg PM removed [$5,500/ton PM removed], which is at the higher end of the range that is considered cost-effective. Table 4 shows the estimated cost-effectiveness of increased PM control over the baseline for Model Plant E for all three facility sizes (small, medium, and large), which have approximately the same cost-effectiveness values as medium-sized facilities, at approximately $2,200 $/Mg [$2,000 per ton PM removed] for both small and large model facilities.

TABLE 3. EMISSIONS, COSTS AND COST-EFFECTIVENESS FOR A MEDIUM-SIZE MODEL EAF FACILITY[1,2]

Model Plant[3,4]	EAF Facility PM Emission Rate	Cost for New Baghouse at New Facility			Annual Cost Difference from Baseline (*Delta* Cost)	Additional PM Controlled from Baseline (*Delta* PM)	Cost-Effectiveness *Delta* Cost/*Delta* PM from Baseline		Incremental Cost-Effectiveness to Next Model Plant	
		Capital	Annual O&M	Annual Costs						
	Mg/yr [tpy]	$	$/yr	$/yr	$/yr	Mg/yr [tpy]	$/Mg	$/ton	$/Mg	$/ton
A	4.6 [5.1]	$21,000,000	$2,200,000	$3,600,000	$2,100,000	67 [74]	$31,000	$28,000	$194,000	$176,000
B	12 [13]	$10,000,000	$1,600,000	$2,200,000	$700,000	60 [66]	$12,000	$11,000	$20,000	$18,000
C	28 [31]	$7,300,000	$1,400,000	$1,900,000	$370,000	43 [48]	$8,500	$7,700	$21,000	$19,000
D	35 [39]	$6,100,000	$1,300,000	$1,700,000	$220,000	36 [40]	$6,100	$5,500	$9,400	$8,500
E[4]	55 [61]	$4,300,000	$1,270,000	$1,600,000	$32,000	16 [18]	$2,000	$1,800	NA	
Baseline[5]	72 [79]	$3,900,000	$1,260,000	$1,500,000	NA	NA	NA	NA		

[1] A medium-size facility is estimated to produce 700,000 Mg/yr [775,000 tpy] steel at capacity.
[2] Numbers may not calculate exactly due to rounding.
[3] The standards for the model plants are as follows: A = 6.5 mg/kg (0.013 lb/ton); B = 17 mg/kg (0.034 lb/ton); C = 40 mg/kg (0.08 lb/ton); D = 50 mg/kg (0.10 lb/ton); E = 79 mg/kg (0.16 lb/ton). See Table 2. Model Facility E represents the standard being proposed.
[4] See Table 2 for additional model plant parameters.
[5] The baseline model facility emissions are based on an estimate in units of mg/kg (lb/ton) of the current limit, which is in

units of mg/dscm (gr/dscf).

TABLE 4. COSTS FOR NEW BAGHOUSES AT NEW FACILITIES FOR MODEL PLANT E (BSER) COMPARED TO BASELINE AT SMALL, MEDIUM, AND LARGE MODEL FACILITIES

Model Facility[1]	EAF Facility PM Emission Rate	Cost for New Baghouse[2]				Additional PM Controlled from Baseline Level	Cost-Effectiveness[2]	Incremental Cost-Effectiveness to Next Model Plant (D)[1,2]
		Capital	Annual O&M	Annual Costs	Annual Costs Delta from Baseline			
	Mg/yr [tpy]	$	$/yr	$/yr	$/yr	Mg/yr [tpy]	Delta $/Mg [$/ton]	$/Mg [$/ton]
Small Facility[3]								
Model E	3.6 [3.9]	$710,000	$190,000	$238,000	$2,290	1.1 [1.2]	$2,200 [$2,000]	$10,000 [$9,300]
Baseline	4.6 [5.1]	$680,000	$190,000	$236,000	--	--	--	
Medium Facility[3]								
Model E	55 [61]	$4,300,000	$1,270,000	$1,550,000	$32,400	16 [18]	$2,000 [$1,800]	$9,400 [$8,500]
Baseline	72 [79]	$3,900,000	$1,260,000	$1,520,000	--	--	--	--
Large Facility[3]								
Model E	246 [271]	$20,000,000	$5,500,000	$6,730,000	$162,000	73 [80]	$2,200 [$2,000]	$11,000 [$9,600]
Baseline	318 [351]	$18,000,000	$5,400,000	$6,570,000	--	--	--	

[1] The baseline model facility emissions are based on emissions in units of mg/kg (lb/ton) of the current limit, which is in units of mg/dscm (gr/dscf). Model Facility E represents the standard being proposed (79 mg/kg [0.16 lb/ton]). Model D is the next higher level of control (50 mg/kg [0.10 lb/ton]). See Table 2.

[2] Cost numbers may not calculate exactly due to rounding.

[3] Production levels are 45,000, 700,000, and 3,100,000 Mg/yr [45,000, 775,000, 3,450,000 tpy] at small, medium, and large model facilities, respectively.

Tables 3 and 4 also show that the incremental cost-effectiveness of the model plants compared to the next level of emissions control. In Table 4, the incremental cost difference between Model E compared to Model Plant D, the next level of emission control, is shown for all three sizes of model plants. For a medium-sized model plant, the incremental cost-effectiveness comparing Model Plant E to Model Plant D is at the higher end of the range that is considered cost-effective, at $9,400/Mg [$8,500/ton]. The incremental cost-effectiveness is even greater for small and large facilities, at greater than or equal to $10,000/Mg ($9,300/ton), also shown in Table 4. Because the control costs for the BSER analysis were derived from A/C ratios taken

from integrated iron and steel baghouses, there is some uncertainty regarding the A/C ratios and costs for EAF facilities. For this reason, in the BSER determination, we have selected Model Plant E to ensure the BSER control level is feasible for new, modified, or reconstructed EAF facilities. Detailed cost information for Model Plants A through E for all three sizes of facilities are shown in the *Cost Memorandum*.[6]

c. Overall Reduction in EAF Emissions with Facility-wide PM Limit at 79 mg/kg (0.16 lb/ton) and 0 percent Melt Shop Opacity Standard

The baghouses at EAF facilities with 0 percent melt shop opacity under the proposed standard (79 mg/kg (0.16 lb/ton)), would emit an estimated 39 Mg/yr [43 tpy] PM emissions for an average facility producing 492,100 Mg/yr (542,500 tpy steel).[10] By contrast, the estimated PM emissions from a baghouse where there is 6 percent melt shop opacity are 11 Mg/yr *(*12 tpy) for an average facility.[10] [See the example provided in section III.A.2.a (BSER for Melt Shop Opacity)] Because the PM prevented from exiting the roof vent is instead collected and sent to the baghouses, this results in an additional 28 Mg/yr (31 tpy) PM emissions (39 Mg/yr minus 11 Mg/yr [43 tpy minus 12 tpy]) emitted from the baghouse at a 0 percent melt shop opacity (average-sized) facility as compared to a melt shop at 6 percent opacity. The total PM emissions prevented from being emitted with 0 percent melt shop opacity compared to 6 percent opacity are 663 Mg/yr *(*731 tpy). However, baghouses have high efficiencies of 98 percent and higher; therefore, the additional baghouse PM emissions of 28 Mg/yr [31 tpy] are much lower than the PM that would have otherwise been emitted out the roof vents. Therefore, despite the additional baghouse emissions, the net amount of PM prevented from being emitted at the average facility is 635 Mg/yr (700 tpy), or 663 Mg/yr minus 28 Mg/yr (731 tpy minus 31 tpy), presenting a clear case of effective overall emissions prevention.

The NSPS general provisions (CAA section 60.11(c)) currently excludes opacity requirements during periods of startup, shutdown and malfunction. We are proposing that opacity limits in 40 CFR part 60, subpart AAb would apply at all times along with all other

emissions limits and standards because there are no technical limitations known to prevent new, reconstructed, or modified facilities from meeting all standards at all times.

3. Requirement for Compliance Testing Every Five Years.

We are proposing that sources complying with 40 CFR part 60, subpart AAb would be required to perform compliance testing every 5 years after the initial testing performed upon startup, as required under 40 CFR part 60.8. This requirement already is required in many of the permits for existing EAF in the EAF dataset and in the industry, and is a standard requirement for testing for other sources of PM emissions for many other industrial sectors.[17]

4. Review of EAF NSPS Standards for Opacity from EAF Control Devices and Dust Handling Systems.

The current NSPS standards for EAF in 40 CFR part 60, subparts AA and AAa, require less than 3 percent opacity from control device (baghouse) exhaust and less than 10 percent for dust handling procedures. In the EAF dataset discussed above, no facilities reported lower levels of opacity for these sources nor were lower levels required in any permits for these or any other EAF facilities. In addition, in determinations reported in the RACT/BACT/LAER Clearinghouse,[4] only the current levels in the rule for baghouse exhaust (9 facilities) and dust handling systems (3 facilities) were considered BACT. Therefore, the conclusion of this review is that the opacity standards for control device exhaust and dust handling systems should remain the same.

5. Proposal of 40 CFR Part 60, Subpart AAb Without Startup, Shutdown, Malfunction Exemptions

In its 2008 decision in *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008), the United States Court of Appeals for the District of Columbia Circuit (the court) vacated portions of two

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[17] 40 CFR part 63 (National Emission Standards for Hazardous Air Pollutants) subparts: FFFFF (Integrated Iron and Steel Manufacturing); DDDD (Plywood and Composite Wood Products Manufacture); LLLLL (Asphalt Processing and Asphalt Roofing Manufacturing); RRRRR (Taconite Iron Ore Processing); UUU (Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units).

provisions in the EPA's CAA section 112 regulations governing the emissions of HAP during periods of SSM. Specifically, the court vacated the SSM exemption contained in 40 CFR 63.6(f)(1) and 40 CFR 63.6(h)(1), holding that under section 302(k) of the CAA, emissions standards or limitations must be continuous in nature and that the SSM exemption violates the CAA's requirement that some section 112 standards apply continuously. Consistent with *Sierra Club v. EPA*, we are proposing standards in this rule that apply at all times. The NSPS general provisions in 40 CFR 60.11 (c) currently exclude opacity requirements during periods of startup, shutdown, and malfunction and the provision in 40 CFR 60.8(c) contains an exemption from nonopacity standards. We are proposing in 40 CFR part 60, subpart AAb a specific requirement at 60.272b (c) that overrides the general provisions for SSM. As provided in 60.11(f), we are proposing that all standards in 40 CFR part 60, subpart AAb apply at all times, including both opacity and nonopacity limits.

The EPA has attempted to ensure that the general provisions we are proposing to override are inappropriate, unnecessary, or redundant in the absence of the SSM exemption. We are specifically seeking comment on whether we have successfully done so.

In proposing the standards in this rule, the EPA has taken into account startup and shutdown periods and, for the reasons explained below, is not proposing alternate standards for those periods because we believe both the PM and opacity standards can be met at all times. With regard to malfunctions, these events are described in the following paragraph.

Periods of startup, normal operations, and shutdown are all predictable and routine aspects of a source's operations. Malfunctions, in contrast, are neither predictable nor routine. Instead they are, by definition, sudden, infrequent, and not reasonably preventable failures of emissions control, process, or monitoring equipment. (40 CFR 60.2). The EPA interprets CAA section 111 as not requiring emissions that occur during periods of malfunction to be factored into development of CAA section 111 standards. Nothing in CAA section 111 or in case law requires that the EPA consider malfunctions when determining what standards of performance

reflect the degree of emission limitation achievable through ‘‘the application of the best system of emission reduction’’ that the EPA determines is adequately demonstrated. While the EPA accounts for variability in setting emissions standards. The EPA is not required to treat a malfunction in the same manner as the type of variation in performance that occurs during routine operations of a source. A malfunction is a failure of the source to perform in a “normal or usual manner” and no statutory language compels the EPA to consider such events in setting section 111 standards of performance. The EPA’s approach to malfunctions in the analogous circumstances (setting “achievable” standards under section 112) has been upheld as reasonable by the D.C Circuit in *U.S. Sugar Corp. v. EPA*, 830 F.3d 579, 606-610 (D.C. Cir. 2016).

B. Amendments to Standards of Performance for Steel Plants: Electric Arc Furnaces Constructed After October 21, 1974, and On or Before August 17, 1983, and Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983, and On or Before [**INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER**]

Amendments to 40 CFR part 60, subparts AA and AAa are being proposed to clarify and refine the rule requirements by adding, removing, or revising ambiguous or outdated definitions, compliance, measurement, monitoring, and reporting requirements; specifically, 40 CFR part 60, sections 60.271 and 60.271a “Definitions”, 60.272 and 60.272a “Standard for particulate matter”, 60.273 and 60.273a “Emission monitoring”, 60.274a “Monitoring of operations”, 60.275a “Test methods and procedures”, and 60.276a “Recordkeeping and reporting requirements”.

We are proposing minor revisions to 40 CFR part 63, subparts AA and AAa (and also include in proposed subpart AAb) in the above-mentioned sections to clarify the rule and enhance compliance and enforcement. One change being considered but not proposed is discussed in further detail in the following paragraphs. The EPA requests comments as to the appropriateness of all the revisions proposed or considered.

The current rules, 40 CFR part 60, subparts AA and AAa, require facilities to respond to a BLDS alarm and complete corrective action for the cause of the alarm within 3 hours. However, the industry has stated that there have been instances where there was insufficient time to respond to a BLDS alarm within 3 hours to both find and fix the cause of a BLDS alarm. According to the SMA, facility owners and operators report that determining the cause of the alarm often requires operators to undertake a multi-step troubleshooting process that requires numerous physical inspections and other diagnostic efforts that sometimes takes longer than 3 hours.

Some baghouses in the industry can have more than 25 compartments housing 5,000 or more individual bags. In these instances, facilities may have to sequentially isolate compartments to determine which compartment might have caused the BLDS alarm. The facility must then physically examine each of the compartments. If a bag has a significant rupture, the cause of the alarm likely will be apparent during that inspection. However, given the sensitivity of BLDS, the alarms can be triggered by extremely small holes in bags. The SMA claims that, in these cases, even physical observation can fail to find any leak within the allocated time period. In the case of a false alarm, which can happen in some cases due to the sensitivity of the BLDS, the careful search of the isolated compartment(s) will yield no useful information, as per the SMA. However, it is important that baghouses work properly on a continuous basis to minimize PM emissions and that leaks, if present, are identified and fixed in a timely manner.

Given the concerns raised by the SMA, we are soliciting comments as to whether the EPA should allow owners and operators a longer time period (*e.g.*, 8 hours, 12 hours, or 24 hours) to find and fix the cause of a BLDS alarm, which would be more consistent with the time period permitted in some other related rules, such as in the Integrated Iron and Steel NESHAP, as promulgated in 2003, 40 CFR part 63, subpart FFFFF (see *https://www.govinfo.gov/content/pkg/CFR-2015-title40-vol14/pdf/CFR-2015-title40-vol14-part63-subpartFFFFF.pdf*), and the Taconite Iron Ore Processing NESHAP, 40 CFR part 63,

subpart RRRRR, also promulgated in 2003 (see *https://www.govinfo.gov/content/pkg/CFR-2015-title40-vol15/pdf/CFR-2015-title40-vol15-part63-subpartRRRRR.pdf*), which both allow a 24-hour response time to address BLDS alarms.

We are soliciting comments, data, and other information regarding this issue and whether the EPA should change the time to both find and fix the cause of a BLDS alarm from 3 hours to a longer timeframe (*e.g.*, 24 hours as in other rules, or some other duration), including whether this change would be an appropriate amount of time to allow for such action, and information supporting this change. We also solicit comments or suggestions regarding potential measures that could be required to be taken by facility owners or operators during the time the BLDS alarm is being investigated to ensure that the increase in time allowed to address a BLDS alarm does not result in an increase in emissions beyond the level allowable under the rule. For example, if we provided additional time to find and repair the cause of the alarm, are there additional steps that could be taken to ensure that the facility continues to comply with the current emissions standards (*e.g.*, opacity limit of less than 3 percent) during that period such as by requiring the facility to conduct an opacity test (EPA Method 9) or visible emissions test (EPA Method 21) on a regular basis (*e.g.*, once every hour) until the cause of the alarm is found and fixed.

C. Electronic Reporting

The EPA is proposing that owners or operators of EAF facilities submit electronic copies of required performance test/demonstration of compliance reports and semiannual reports through the EPA's Central Data Exchange (CDX) using the Compliance and Emissions Data Reporting Interface (CEDRI). A description of the electronic data submission process is provided in the memorandum *Electronic Reporting Requirements for New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) Rules*, available in the docket for this action. The proposed rule would require that performance test/demonstration of compliance results collected using test methods that are supported by the

EPA's Electronic Reporting Tool (ERT) as listed on the ERT website[18] at the time of the test be submitted in the format generated through the use of the ERT or an electronic file consistent with the xml schema on the ERT website, and other performance test/demonstration of compliance results be submitted in portable document format (PDF) using the attachment module of the ERT.

For semiannual reports, the proposed rule would require that owners or operators use the appropriate spreadsheet template to submit information to CEDRI. A draft version of the proposed templates for these reports is included in the docket for this action.[19] The EPA specifically requests comment on the content, layout, and overall design of the template.

Additionally, the EPA has identified two broad circumstances in which electronic reporting extensions may be provided. These circumstances are (1) outages of the EPA's CDX or CEDRI which preclude an owner or operator from accessing the system and submitting required reports; and (2) *force majeure* events, which are defined as events that will be or have been caused by circumstances beyond the control of the affected facility, its contractors, or any entity controlled by the affected facility that prevent an owner or operator from complying with the requirement to submit a report electronically. Examples of *force majeure* events are acts of nature, acts of war or terrorism, equipment failure, or safety hazards beyond the control of the facility. The EPA is providing these potential extensions to protect owners or operators from noncompliance in cases where they cannot successfully submit a report by the reporting deadline for reasons outside of their control. In both circumstances, the decision to accept the claim of needing additional time to report is within the discretion of the Administrator, and reporting should occur as soon as possible.

The electronic submittal of the reports addressed in this proposed rulemaking would

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[18] *https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert*

[19] See 40 CFR Part 60, Subpart A, AAa, and AAb, *Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels*, 40 CFR Part 60.276(g) Semiannual Compliance Report Spreadsheet Template, available at Docket ID No. EPA-HQ-OAR-2002-0049.

increase the usefulness of the data contained in those reports and is keeping with current trends in data availability and transparency. Electronic submittal would further assist in the protection of public health and the environment by improving compliance, facilitating the ability of regulated facilities to demonstrate compliance with requirements, and by facilitating the ability of delegated state, local, tribal, and territorial air agencies and the EPA to assess and determine compliance. Ultimately, electronic reporting would reduce the burden on regulated facilities, delegated air agencies, and the EPA by making the data easy to record and read. Electronic reporting also eliminates paper waste and redundancies and minimizes data reporting errors. The resulting electronic data are more quickly and accurately accessible to the affected facilities, air agencies, the EPA, and the public. Moreover, electronic reporting is consistent with the EPA's plan[20] to implement Executive Order 13563 and is in keeping with the EPA's agency-wide policy[21] developed in response to the White House's Digital Government Strategy.[22] For more information on the benefits of electronic reporting, see the memorandum *Electronic Reporting Requirements for New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) Rules*, referenced earlier in this section.

IV. Summary of Cost, Environmental, and Economic Impacts

A. What are the air quality and other environmental impacts?

For proposed 40 CFR part 60, subpart AAb, the reductions in PM potentially emitted would have a beneficial air impact when comparing 6 percent melt shop opacity in the baseline to the 0 percent opacity proposed for 40 CFR part 60, subpart AAb. Similarly, reductions in PM less than 2.5 micrometers ($PM_{2.5}$) potentially emitted also are estimated from new, modified and

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[20] *EPA's Final Plan for Periodic Retrospective Reviews*. August 2011. Available at: *https://www.regulations.gov/document?D=EPA-HQ-OA-2011-0156-0154*.

[21] *E-Reporting Policy Statement for EPA Regulations*. September 2013. Available at: *https://www.epa.gov/sites/production/files/2016-03/documents/epa-ereporting-policy-statement-2013-09-30.pdf*.

[22] *Digital Government: Building a 21st Century Platform to Better Serve the American People*. May 2012. Available at: *https://obamawhitehouse.archives.gov/sites/default/files/omb/egov/digital-government/digital-government.html*.

reconstructed EAF under the proposed NSPS rule, 40 CFR part 60, subpart AAb, compared to the emissions that are allowed under the current NSPS with 6 percent melt shop opacity.

Based on the actual emissions emitted by 31 facilities in the EAF data, where the actual average opacity was 0.14 percent, the emissions impact for PM from nine new facilities projected in the next 10 years (estimated to reflect three small, four medium, and two large) is estimated to be an emissions reduction of 142 Mg (157 tons) PM that would otherwise be emitted in 2032. Using an estimate of 0.218[23] for the ratio of $PM_{2.5}$ to PM the emissions impact for $PM_{2.5}$ from nine new facilities projected in the next 10 years, as above, would be an emissions reduction of 30 Mg (33 tons) of $PM_{2.5}$ in 2032. Details of the emissions estimates can be found in the memorandum titled *"Particulate Matter Emissions from Electric Arc Furnace Facilities"* located in the docket for this rule (Docket ID No. EPA-OAR-2002-0049) and hereafter referred to as the "Emissions Memorandum." No PM emission reductions are estimated for the new PM limit for facility-wide total baghouse emissions in mg/Mg (lb/ton) because all facilities in the 2010 EAF data could meet the new limit and, therefore, we expect that all new facilities also would be able to meet the limit. The EPA asks for comments on these assumptions and for emission test reports, where appropriate

Solid wastes would increase slightly, approximately 17 tons per facility, on average, with the additional PM collected to meet 0 percent melt shop opacity limit under proposed 40 CFR part 60, subpart AAb as compared to current facilities meeting opacity limits under 40 CFR part 60, subparts AA and AAa. The small increase in solid wastes would be the same for both the carbon and specialty steel shops. However, most EAF dust is recycled to reclaim zinc.[24, 25]

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[23] The $PM_{2.5}$ to PM ratio is an average of similar uncontrolled sources, as cited in *"Evaluation of $PM_{2.5}$ Emissions and Controls at Two Michigan Steel Mills and a Coke Oven Battery."* Final Report. Work Assignment 4-12 under EPA Contract No. 68-D-01-073 by RTI International, Research Triangle Park, NC. U.S. Environmental Protection Agency, Research Triangle Park, NC. February 2006.

[24] Proven Waelz Kiln Technology. Accessed 2/18/22. *http://www.globalsteeldust.com/waelz_kiln_technology*.

[25] Rütten, J. *Application of the Waelz Technology on Resource Recycling of Steel Mill Dust*. Düsseldorf: GmbH. D-40225, 2006.

A relatively small increase in energy results from the use of electricity to power fans that draw EAF exhaust air into the canopy hood that captures the PM and sends PM-laden air to the baghouse, at 66, 940, 4,700 MW-hr per year for small, medium, and large facilities, respectively. Some decrease in energy use may occur if the A/C ratio of the fabric filters to meet the proposed facility baghouse standard is lowered due to an increase in number of bags.

Finally, there would be no water or noise impacts with the proposed 40 CFR part 60, subpart AAb.

B. What are the cost impacts?

Costs are estimated for regular testing every 5 years for nine new facilities projected in the 10 years after proposal. Annual testing costs are $6,672 per year for conducting EPA Method 5 for PM emissions at each baghouse's exhaust for each facility over a 5-year period, using an estimate of 1.64 baghouses per facility based on the EAF data. While new sources that start up after proposal would be subject to testing every five years under the proposed NSPS, 40 CFR part 60, subpart AAb, EPA Method 5 testing is required upon initial startup under 40 CFR part 60.8. Therefore, in the first 5 years after startup there would be no testing costs as a result of the proposed rule for new sources that start up in this period. In the sixth year through the tenth year after initial startup, the new sources estimated to start up in the first five years after proposal would incur costs of approximately $6,000 per year for testing, based on an estimate of 0.9 new facilities per year (0.9 x $6,672). Because the startup of new facilities is estimated to be staggered, with 0.9 new facilities starting each year after proposal, the total costs for testing under this rule after the initial testing required under 40 CFR part 60.8 would range from approximately $6,000 in the sixth year after proposal to a total of approximately $30,000 in the tenth year after proposal (reflecting costs for 4.5 facilities (0.9 x 5 years)), where the testing costs that would occur in years six through ten are for the new facilities that start up in years one through five after proposal.

Based on information from 2010 through 2017 obtained by the EPA for 31 EAF

facilities, the EPA found the average opacity to be 0.14 percent, with about half of the units achieving 0 percent opacity in the tests. Because opacity in the baseline in already low, the EPA expects any new, modified or reconstructed facility would be able to meet the proposed opacity and PM limits without any additional control devices beyond those already required by the NSR program or applicable state requirements or by minor process changes to improve capture of exhaust flows or other process parameters, if needed. While the actual cost impacts of the proposed 0 percent opacity limit would likely be substantially lower, the EPA developed an upper bound estimate of potential compliance costs based upon the assumption that affected units would install a partial roof canopy above the crane rails to ensure 0 percent melt shop opacity compared to a hypothetical baseline model facility meeting 6 percent opacity. These costs are estimated to be $60,000, $800,000, and $4,000,000 per year per facility for small, medium, and large model facilities, respectively.

Total annual costs for 40 CFR part 60, subpart AAb, based on nine new facilities in the first 10 years after proposal are $180,000 per year for three small facilities, $3,200,000 per year for four medium facilities, and $8,000,000 per year for two large facilities for a total of $11,380,000 per year by the tenth year after proposal using the same staggered startup rate described above for testing costs. Details of the cost estimates can be found in the *Cost Memorandum*.[6]

For the proposed mass-based PM standard in mg/kg (lb/ton) for facility-wide total baghouse PM emissions, we estimated the capital and annual costs between a baseline scenario based on the current NSPS individual baghouse limit (in mg/dscm (gr/dscf)) and a scenario based on a lower total facility-wide baghouse PM emissions in mg/kg (lb/ton), the format for the BSER we are proposing. Because data from the 31 existing EAF facilities in the 2010 data acquired by the EPA that was used to develop the facility-wide PM limit show these facilities already could meet the 79 mg/kg (0.16 lb/ton) total facility baghouse PM limit, we expect the proposed mass-based standard applied to future new, modified, and reconstructed EAF facilities would be

feasible and pose minimal cost impacts, if any. The EPA asks for comments on these cost assumptions and for emission test reports, where appropriate.

Additional cost analysis, including calculation of costs using the upper bound cost estimates for the installation of partial roof canopies, can be found in the Economic Impact Analysis (EIA) associated with this proposal, which is available in the docket for this rule. The EIA additionally presents costs in terms of the present value and equivalent annual value of projected compliance costs over the 2023 to 2032 period discounted at 3 and 7 percent.

C. What are the economic impacts?

Economic impact analyses focus on changes in market prices and output levels. If changes in market prices and output levels in the primary markets are significant enough, impacts on other markets may also be examined. Both the magnitude of costs associated with the proposed requirements and the distribution of these costs among affected facilities can have a role in determining how the market will change in response to a regulatory requirement. As discussed in section IV.B., the cost analysis incorporates the assumption that units affected by the new subpart AAb would install a partial roof canopy above the crane rails to ensure 0 percent melt shop opacity compared to a hypothetical baseline model facility meeting 6 percent opacity. The costs should be viewed as upper bound estimates on the potential compliance costs as the EPA expects any new, modified or reconstructed facility would be able to meet the proposed opacity and PM limits without any additional control devices beyond those already required by the NSR program or applicable state requirements or by minor process changes to improve capture of exhaust flows or other process parameters, if needed. As discussed in the EIA, even under the upper bound cost assumptions described above, the EPA expects the potential economic impacts of this proposal will be small.

As required by the Regulatory Flexibility Act (RFA), we performed an analysis to determine if any small entities might be disproportionately impacts the proposed requirements. The EPA does not know what firms will construct new facilities in the future and, as a result,

cannot perform a cost-to-sales analysis with the same confidence as we do with firms owning existing facilities. However, based on an assessment of the new units built during the 2011 to 2020 period and the units that have been announced, which are all owned by firms that are not considered to be small businesses, the EPA does not believe it is likely that any future facilities will be built by a small business. See the EIA in the docket for this action for additional information on the analysis presented in this section.

D. What are the benefits?

The proposed revisions to 40 CFR part 60, subparts AA and AAa would both clarify the rule and enhance compliance and enforcement. Implementing the proposed subpart, 40 CFR part 60, subpart AAb, is expected to reduce PM emissions, including $PM_{2.5}$. As explained in section IV.A, the proposed requirements are projected to reduce 30 Mg (33 tons) of $PM_{2.5}$ in 2032. These emissions reductions would be expected to produce health benefits in the affected locations. The Integrated Science Assessment for Particulate Matter (ISA) report[26] contains synthesized toxicological, clinical, and epidemiological evidence that the EPA uses to determine whether each pollutant is causally related to an array of adverse human health outcomes associated with either acute (*i.e.*, hours or days-long) or chronic (*i.e.*, years-long) exposure. For each outcome, the ISA report includes the EPA conclusions as to whether this relationship is causal, likely to be causal, suggestive of a causal relationship, inadequate to infer a causal relationship, or not likely to be a causal relationship.

In the ISA report it was found that acute exposure to $PM_{2.5}$ was causally related to cardiovascular effects and mortality (*i.e.*, premature death), and respiratory effects as likely-to-be-causally related. In the ISA report, the EPA identified cardiovascular effects and total mortality as causally related to long-term exposure to $PM_{2.5}$ and respiratory effects as likely-to-be-causal; and the evidence was suggestive of a causal relationship for reproductive and

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[26] *Integrated Science Assessment for Particulate Matter* (Final Report, 2019). EPA/600/R-19/188. U.S. Environmental Protection Agency, Washington, DC. 2019.

developmental effects as well as cancer, mutagenicity, and genotoxicity.

The benefits per ton (BPT) of the $PM_{2.5}$ emissions reductions cited above for years 2025 and 2030 and at 3 percent and 7 percent discount rates are presented in Table 5 below in 2020 dollars. Information regarding the process by which these BPTs were calculated is available in the technical support document *Estimating the Benefit per Ton of Reducing Directly-Emitted $PM_{2.5}$, $PM_{2.5}$ Precursors and Ozone Precursors from 21 Sectors.*[27]

TABLE 5. BENEFITS PER TON OF $PM_{2.5}$ REDUCED

Year	$/ton $PM_{2.5}$ Emission Reductions - $2020			
	3 Percent Discount Rate		7 Percent Discount Rate	
	Low	High	Low	High
2025	$407,000	$413,000	$366,000	$371,000
2030	$431,000	$449,000	$388,000	$404,000

Note: The range reported here reflects the use of risk estimates from two alternative long-term exposure PM-mortality studies.

E. What are the environmental justice impacts?

Consistent with the EPA's commitment to integrating environmental justice (EJ) in the agency's actions, and following the directives set forth in multiple Executive Orders, [28] the Agency has carefully considered the impacts of this action on communities with EJ concerns, as per Executive Order 12898 (see section V.J below for more discussion). We do not know the locations of future new, modified, or reconstructed facilities that are affected by this rule, therefore, we assessed the population living in areas around existing EAF facilities.

Demographic proximity analyses allow one to assess the proximity of vulnerable populations to environmental hazards as a proxy for exposure and the potential for adverse health impacts that may occur at a local scale due to economic activity at a given location such as noise,

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[27] *Estimating the Benefit per Ton of Reducing Directly-emitted $PM_{2.5}$, $PM_{2.5}$ Precursors and Ozone Precursors from 21 Sectors*. U.S. Environmental Protection Agency, Office of Air and Radiation, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711. 2022. Available at: *https://www.epa.gov/system/files/documents/2021-10/source-apportionment-tsd-oct-2021_0.pdf*.

[28] Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. 59 FR 7629, February 16, 1994.

odors, and traffic. We include the following proximity screening analyses to characterize the potential for communities with EJ concerns to be impacted by emissions sources covered under this EPA action.

Although baseline proximity analyses are presented here, several important caveats should be noted. Emissions are not expected to increase from the proposed rulemaking, so most communities nearby affected facilities should not experience increases in exposure from directly-emitted pollutants. However, facilities may vary widely in terms of the risk they already pose to nearby populations; therefore, proximity to affected facilities does not capture the variation in baseline exposure across communities. Nor does it indicate that any exposures or impacts would occur and should not be interpreted as a direct measure of exposure or impact. These points limit the usefulness of proximity analyses when attempting to answer question 1 or 2 from the EPA's EJ technical guidance: (1) [Does the rule] "create new disproportionate impacts on minority populations, low-income populations, and/or indigenous peoples"; and (2) [Does the rule] "exacerbate existing disproportionate impacts on minority populations, low-income populations, and/or indigenous peoples".[29]

We note that while the total proportion of people of color in proximity to existing EAF facilities is similar to the national average, the population of African Americans is higher than the national average. Also, the education level of populations near existing sources is similar to the national average; however, the percent of population living below the poverty level is above the national average.

For the new EAF proposed rule, subpart, 40 CFR part AAb, the EPA expects that the proposed rule would enhance compliance by increasing the frequency of emissions testing, reducing emissions of PM by meeting a lower opacity limit for melt shop roof vents, improving

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[29] *Technical Guidance for Assessing Environmental Justice in Regulatory Actions*. Section 3: Key Analytic Considerations, 3.1 Analyzing Differential Impacts. U.S. Environmental Protection Agency, Washington, DC. June 2016. p. 11. See *https://www.epa.gov/sites/default/files/2016-06/documents/ejtg_5_6_16_v5.1.pdf*

the reporting of total facility-wide baghouse emissions, and requiring facilities to meet the proposed standards, including opacity, at all times, thereby overriding compliance exemptions in the General Provisions to CAA part 60 (part 60.11(c)) provided for opacity during periods of startup, shutdown, and malfunction.

Following is a more detailed description of how the agency considers EJ in the context of regulatory development, and specific actions taken to address EJ concerns for this action.

Executive Order 12898 directs the EPA to identify the populations of concern who are most likely to experience unequal burdens from environmental harms; specifically, minority populations, low-income populations, and indigenous peoples (59 FR 7629, February 16, 1994). Additionally, Executive Order 13985 is intended to advance racial equity and support underserved communities through federal government actions (86 FR 7009, January 20, 2021). The EPA defines EJ as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."[30] The EPA further defines the term fair treatment to mean that "no group of people should bear a disproportionate burden of environmental harms and risks, including those resulting from the negative environmental consequences of industrial, governmental, and commercial operations or programs and policies." In recognizing that minority and low-income populations often bear an unequal burden of environmental harms and risks, the EPA continues to consider ways of protecting them from adverse public health and environmental effects of air pollution.

To examine some population demographics of communities residing nearby existing sources, we performed a demographic analysis, which is an assessment of individual demographic groups of the populations living within 5 kilometers (km) and within 50 km of the facilities. The EPA then compared the data from this analysis to the national average for each of the demographic groups.

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[30] See *https://www.epa.gov/environmentaljustice.*

This action proposes standards of performance for new, modified, and reconstructed EAF sources that commence construction after the rule is proposed. Therefore, the locations of the construction of new EAF facilities are not known. In addition, it is not known which of the existing EAF facilities would be modified or reconstructed in the future. Therefore, the demographic analysis was conducted for the 88 existing EAF facilities as a characterization of the demographics in areas where these facilities are now located.

The results of the demographic analysis (see Table 6) indicate that, for populations within 5 km of the 88 existing EAF facilities, the percent minority population (being the total population minus the white population) is below the national average (37 percent versus 40 percent). This difference is largely driven by the percent Hispanic or Latino population that is lower than the national average (14 percent versus 19 percent). However, the percent of the population that is African American is above the national average (17 percent versus 12 percent). The percent of people living below the poverty level is higher than the national average (17 percent versus 13 percent). The percent of the population over 25 without a high school diploma and the percent of the population in linguistic isolation are similar to the national averages.

The results of the analysis of populations within 50 km of the 88 EAF facilities is similar to the 5 km analysis for minorities, with lower total minorities being driven by a smaller Hispanic or Latino population and the African American population being slightly above the national average. However, the percent of the population living below the poverty level, over 25 without a high school diploma, and in linguistic isolation were all similar to the national averages.

A summary of the demographic assessment performed for the EAF facilities is included as Table 6. The methodology and the results of the demographic analysis are presented in a technical report, *Analysis of Demographic Factors for Populations Living Near Electric Arc Furnace Facilities*, available in the docket for this action (Docket ID No. EPA-HQ-OAR-2002-0049).

TABLE 6. DEMOGRAPHIC ASSESSMENT RESULTS FOR EAF FACILITIES

Demographic Group	Nationwide	Population within 50 km of 88 Existing EAF Facilities	Population within 5 km of 88 Existing EAF Facilities
Total Population	328,016,242	71,577,375	2,781,377
	White and Minority by Percent		
White	60%	62%	63%
Minority	40%	38%	37%
	Minority by Percent		
African American	12%	15%	17%
Native American	0.7%	0.3%	0.3%
Hispanic or Latino (includes white and nonwhite)	19%	15%	14%
Other and Multiracial	8%	8%	7%
	Income by Percent		
Below Poverty Level	13%	13%	17%
Above Poverty Level	87%	87%	83%
	Education by Percent		
Over 25 and without a High School Diploma	12%	11%	11%
Over 25 and with a High School Diploma	88%	89%	89%
	Linguistically Isolated by Percent		
Linguistically Isolated	5%	5%	4%

Notes:

1. The nationwide population count and all demographic percentages are based on the Census' 2015-2019 American Community Survey five-year block group averages and include Puerto Rico. Demographic percentages based on different averages may differ. The total population counts within 5 km and 50 km of all facilities are based on the 2010 Decennial Census block populations.
2. Minority population is the total population minus the white population.
3. To avoid double counting, the "Hispanic or Latino" category is treated as a distinct demographic category for these analyses. A person is identified as one of five racial/ethnic categories above: White, African American, Native American, Other and Multiracial, or Hispanic/Latino. A person who identifies as Hispanic or Latino is counted as Hispanic/Latino for this analysis, regardless of what race this person may have also identified as in the Census.
4. This action proposes standards of performance for new, modified, and reconstructed sources that commence construction after the rule is proposed. Therefore, the locations of the construction of new EAF facilities are not known. In addition, it is not known which of the existing EAF facilities would be modified or reconstructed in the future. Therefore, the demographic analysis was conducted for the 88 existing EAF facilities as a characterization of the demographics in areas where these facilities are now located.

The EPA expects that the Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After [**INSERT DATE OF**

PUBLICATION IN THE FEDERAL REGISTER] would ensure compliance via frequent testing and reduce emissions via a lower opacity limit for melt shop roof vents and by meeting all the proposed standards at all times (including periods of startup, shutdown, and malfunctions). Therefore, there may be a positive, beneficial effect for populations in proximity to any future affected sources, including in communities potentially overburdened by pollution, which are often minority, low-income and indigenous communities.

The EPA is asking for comment on the list of the current 88 EAF facilities thought to be subject to the NSPS. The Excel™ file document named "EAF NSPS Facility List 2022" in the docket for this rulemaking (EPA-HQ-OAR-2002-0049) contains the list of the 88 EAF NSPS facilities and is formatted to allow for public comments. Please follow the instructions in the file's first worksheet, called "How to Comment," that describes the procedures to comment and submit the edited file back to the EPA.

V. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at *https://www2.epa.gov/laws-regulations/laws-and-executive-orders*.

A. Executive Orders 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is not a significant regulatory action and was, therefore, not submitted to the Office of Management and Budget (OMB) for review.

B. Paperwork Reduction Act

The information collection activities in this proposed rule have been submitted for approval to OMB under the PRA. The ICR document that the EPA prepared has been assigned the EPA ICR number 1060.19. You can find a copy of the ICR in the docket for this rule, and it is briefly summarized here. The information collection requirements are not enforceable until OMB approves them.

We are proposing amendments to 40 CFR part 60, AA and AAa that require electronic

reporting, and editorial and clarifying changes to rule language that are estimated to reduce time spent and paperwork for rule. We are proposing a new subpart for new, modified, or reconstructed facilities that start up after this proposal (40 CFR part 60, subpart AAb) with similar reporting, recordkeeping, and compliance requirements as 40 CFR part 60, subparts AA and AAa.

Respondents/affected entities: EAF facilities.

Respondent's obligation to respond: Mandatory (40 CFR part 60, subparts AA; AAa; and AAb).

Estimated number of respondents: 90, includes 88 estimated current facilities subject to 40 CFR part 60, subparts AA and AAa, and three new facilities that would be subject to 40 CFR part 60, subpart AAb in the three years after proposal.

Frequency of Response: One time.

Total estimated burden: The annual recordkeeping and reporting burden for facilities to comply with all the requirements in the NSPS is estimated to be 57,100 hours (per year). Burden is defined at 5 CFR 1320.3(b).

Total estimated cost: The annual recordkeeping and reporting costs for all facilities to comply with all of the requirements in the NSPS is estimated to be $6,950,000 (per year), of which $61,617 (per year) is for this proposed rule ($60,964 for Method 5 compliance and $653 for electronic reporting), and $6,690,000 for other costs related to continued compliance with the NSPS, including $200,000 for paperwork associated with operation and maintenance requirements. The total rule costs reflect a reduction cost of $400,000 (per year) from the previous ICR that reflects savings due to electronic reporting.

An Agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for the EPA's regulations in 40 CFR are listed in 40 CFR part 9. When OMB approves this ICR, the Agency will announce that approval in the *Federal Register* and publish a technical amendment to 40 CFR part 9 to display the OMB control number for the approved

information collection activities contained in this final rule. You may submit your comments on the Agency's need for this information, the accuracy of the provided burden estimates and any suggested methods for minimizing respondent burden to the EPA using the docket identified at the beginning of this rule. You may also send your ICR-related comments to OMB's Office of Information and Regulatory Affairs via email to OIRA_submission@omb.eop.gov, Attention: Desk Officer for the EPA. Since OMB is required to make a decision concerning the ICR between 30 and 60 days after receipt, OMB must receive comments no later than [**INSERT DATE 30 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER**]. The EPA will respond to any ICR-related comments in the final rule.

C. Regulatory Flexibility Act

I certify that this action would not have a significant economic impact on a substantial number of small entities under the RFA. This action is not expected to impose any requirements on the three identified small entities among the approximately 90 EAF facilities (36 companies), because most facilities are likely to be performing regular compliance tests as part of their permit renewal process. Additionally, no facilities are expected to be built by small entities over the next 10 years based on past industry growth and small business starts. The three current facilities owned by small businesses were started in 1912, 1968, and 1994, respectively. Further discussion is included in the EIA for this proposal.

D. Unfunded Mandates Reform Act of 1995 (UMRA)

This action does not contain an unfunded mandate of $100 million or more as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. While this action creates an enforceable duty on the private sector, the cost does not exceed $100 million or more.

E. Executive Order 13132: Federalism

This action does not have federalism implications. It would not have substantial direct effects on the states, on the relationship between the national government and the states, or on

the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

This action does not have tribal implications as specified in Executive Order 13175. It would not have substantial direct effects on tribal governments, on the relationship between the Federal government and Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes. No tribal governments own facilities that are the subject of this rulemaking. Thus, Executive Order 13175 does not apply to this action.

G. Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks

This action is not subject to Executive Order 13045 because the EPA does not believe there are any environmental health or safety risks that disproportionately affects children due to this action. In addition, we believe there would be a positive, beneficial health effect for children as well as others living in proximity to new affected sources as a result of the specific aspects of the proposed rule not in the current rules, such as ensuring compliance via frequent testing, meeting a lower opacity limit for melt shop roof vents, reporting baghouse emissions as a facility-wide total, and meeting all the proposed standards at all times, including periods of startup, shutdown, and malfunctions.

H. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This action is not subject to Executive Order 13211, because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act (NTTAA) and 1 CFR Part 51

This action involves technical standards. Therefore, the EPA conducted searches for the EAF NSPS through the Enhanced National Standards Systems Network Database managed by the American National Standards Institute (ANSI). We also contacted voluntary consensus standards (VCS)organizations and accessed and searched their databases. We conducted

searches for EPA Methods 1, 2, 3, 3A, 3B, 4, 5, 5D, and 22 of 40 CFR part 60, appendix A. During the EPA's VCS search, if the title or abstract (if provided) of the VCS described technical sampling and analytical procedures that are similar to the EPA's reference method, the EPA reviewed it as a potential equivalent method. We reviewed all potential standards to determine the practicality of the VCS for this rule. This review requires significant method validation data that meet the requirements of EPA Method 301 for accepting alternative methods or scientific, engineering and policy equivalence to procedures in the EPA reference methods. The EPA may reconsider determinations of impracticality when additional information is available for a particular VCS. No applicable VCS were identified for EPA Methods 5D and 22.

The EPA is incorporating by reference the VCS ANSI/ASME PTC 19.10–1981, "Flue and Exhaust Gas Analyses," to provide that the manual procedures (but not instrumental procedures) of VCS ANSI/ASME PTC 19.10-1981—Part 10 may be used as an alternative to EPA Method 3B. The manual procedures (but not instrumental procedures) of VCS ANSI/ASME PTC 19.10-1981—Part 10 (incorporated by reference—see 40 CFR 63.14) may be used as an alternative to EPA Method 3B for measuring the oxygen or carbon dioxide content of the exhaust gas. This standard is acceptable as an alternative to EPA Method 3B and is available from ASME at *https://www.asme.org*; by mail at Three Park Avenue, New York, NY 10016-5990; or by telephone at (800) 843-2763. This method determines quantitatively the gaseous constituents of exhausts resulting from stationary combustion sources. The gases covered in ANSI/ASME PTC 19.10–1981 are oxygen, carbon dioxide, carbon monoxide, nitrogen, sulfur dioxide, sulfur trioxide, nitric oxide, nitrogen dioxide, hydrogen sulfide, and hydrocarbons; however, the use in this rule is only applicable to oxygen and carbon dioxide.

In the proposed rule, the EPA is incorporating by reference the VCS ASTM D7520-16, Standard Test Method for Determining the Opacity of a Plume in the Outdoor Ambient Atmosphere, as an acceptable alternative to EPA Method 9 with the following caveats:

- During the DCOT certification procedure outlined in Section 9.2 of ASTM D7520-16,

the facility or the DCOT vendor must present the plumes in front of various backgrounds of color and contrast representing conditions anticipated during field use such as blue sky, trees, and mixed backgrounds (clouds or a sparse tree stand).

- The facility must also have standard operating procedures in place including daily or other frequency quality checks to ensure the equipment is within manufacturing specifications as outlined in Section 8.1 of ASTM D7520-16.
- The facility must follow the recordkeeping procedures outlined in 40 CFR 63.10(b)(1) for the DCOT certification, compliance report, data sheets, and all raw unaltered JPEGs used for opacity and certification determination.
- The facility or the DCOT vendor must have a minimum of four independent technology users apply the software to determine the visible opacity of the 300 certification plumes. For each set of 25 plumes, the user may not exceed 15-percent opacity of anyone reading and the average error must not exceed 7.5-percent opacity.
- This approval does not provide or imply a certification or validation of any vendor's hardware or software. The onus to maintain and verify the certification or training of the DCOT camera, software, and operator in accordance with ASTM D7520-16 is on the facility, DCOT operator, and DCOT vendor. This method describes procedures to determine the opacity of a plume, using digital imagery and associated hardware and software, where opacity is caused by PM emitted from a stationary point source in the outdoor ambient environment. The opacity of emissions is determined by the application of a DCOT that consists of a digital still camera, analysis software, and the output function's content to obtain and interpret digital images to determine and report plume opacity. The ASTM D7520-16 document is available from ASTM at *https://www.astm.org* or l100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, telephone number: (610) 832-9500, fax number: (610) 8329555 at *service@astm.org.*

The EPA is finalizing the use of the guidance document, *Fabric Filter Bag Leak Detection Guidance*, EPA-454/R-98-015, Office of Air Quality Planning and Standards

(OAQPS), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina, September 1997. This document provides guidance on the use of triboelectric monitors as fabric filter bag leak detectors. The document includes fabric filter and monitoring system descriptions; guidance on monitor selection, installation, setup, adjustment, and operation; and quality assurance procedures. The document is available at *https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=2000D5T6.PDF*.

Additional information for the VCS search and determinations can be found in the three memoranda titled *Voluntary Consensus Standard Results for Standards of Performance for Steel Plants: Electric Arc Furnaces Constructed After October 21, 1974, and On or Before August 17, 1983*; *Voluntary Consensus Standard Results for Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983, and On or Before* [**INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER**]; and *Voluntary Consensus Standard Results for Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After* [**INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER**], available in the docket for this proposed rule.

J. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

The EPA believes that this action does not have disproportionately high and adverse human health or environmental effects on minority populations and indigenous peoples, as specified in Executive Order 12898 (59 FR 7629, February 16, 1994). The impacts of these proposed rules are to clarify current rules and, for new sources built after publication of this proposal, to ensure compliance via frequent testing, to meet a lower opacity limit for melt shop roof vents, to report baghouse emissions as a facility-wide total, and to meet all the proposed standards at all times, including periods of startup, shutdown, and malfunctions. The documentation for this decision is contained in section IV.E of this preamble and in a technical

report, *Analysis of Demographic Factors for Populations Living Near Electric Arc Furnace Facilities,* located in the docket for this rule.

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Michael S. Regan,

Administrator.

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